Golder Associates

053-7043

March 21, 2006

Norcal Waste Systems Hay Road Landfill, Inc.
6426 Hay Road
Vacaville, California 95687

Attention: Ms. Stephanie Young

RE: DM-4.2 BASE LINER DESIGN REPORT AND CONSTRUCTION DOCUMENTS NORCAL WASTE SYSTEMS HAY ROAD LANDFILL SOLANO COUNTY, CALIFORNIA

Dear Ms. Young:

Golder Associates Inc. (Golder) is pleased to submit this design report and attached construction documents for the construction of the Disposal Module (DM) 4.2 base liner system at the Norcal Waste Systems Hay Road Sanitary Landfill (NWSHRL) in Solano County, California. Norcal Waste Systems Hay Road Landfill, Inc. (NWSHRLI) owns and operates the NWSHRL as a Class II solid waste disposal facility.

This report presents the grading plan and base liner design for DM-4.2, which has been designed as a Class II disposal unit in compliance with the design requirements specified in the site's Waste Discharge Requirements (WDR's) Order No. R5-2003-0118.. Construction of DM-4.2 is planned to begin in April 2006 with the placement of general fill. Drawing 1 of the Construction Plans (Appendix A) shows the site vicinity and location maps. Drawing 2 shows the site development plan and the limits of the DM-4.2 base liner.

FINAL BASE GRADING

The grading plan for DM-4.2 conforms to the minimum ground water separation requirements developed by Geosyntec (1995) and stipulated in WDR Order No. R5-2003-0118. Grading for the 6.0-acre DM-4.2 base liner construction will involve placement of approximately 92,000 cubic yards of general fill to establish the lower limits of the liner system as shown in Drawing 3 of the construction plans (Appendix A). The DM-4.2 base grades are extensions of the previously constructed DM-4.1 and DM-5.2 base liner systems and do not include construction of any portion of the perimeter levee. These grades maintain a minimum 2 percent grade on the floor and 1 percent grade along the Leachate Collection and Removal System (LCRS) drainage pipes, which are consistent with the construction of previous Class II landfill disposal units at the site (DM-2.2a, DM-2.2b, DM-11.1, DM-11.2, DM-4.1, DM-5.1, and DM-5.2). The base grading and construction requirements are designed to provide positive drainage to the existing collection sumps in DM-4.1 and DM-5.2 and to provide a firm, stable foundation for the containment system (Geosyntec, 1995).

CONTAINMENT SYSTEM CONFIGURATION

The DM-4.2 containment system conforms to the containment system described in Golder's Liner Performance Demonstration Report (April 15, 2003) and the associated May 6, 2003 addendum. This containment system configuration was adopted as Finding 53 in the WDR's Order No. R5-2003-0118. As described in these documents, the containment system for the proposed floor liner system consists of the following components from top to bottom:

- 12-inch thick operations layer;
- 8-oz/sy geotextile filter layer;
- 6-inch thick LCRS gravel (3/8-inch minus);
- 60-mil textured HDPE geomembrane;
- 24-inch thick low-permeability soil ($k \leq 1x10^{-7}$ cm/s);
- 6-inch thick foundation soil ;
- Leak detection geocomposite drainage layer;
- 60-mil textured HDPE geomembrane; and
- Subgrade (fine-grained soils).

The DM-4.2 base liner project includes the following additional design and/or enhanced CQA features:

- An electrical leak location survey to be conducted following the placement of the operations soil layer in accordance with the current WDR's.
- The construction specifications require that LCRS gravel grading equipment contain laser or global positioning surveying equipment that provides the operator with real-time measurements of the dozer blade relative to the liner. Additional requirements regarding minimum operator experience and maximum push distances have been incorporated into the specifications.
- Additional perforated pipes within DM-4.1 and DM-5.2 will be extended within DM-4.2. These pipes are contained in the LCRS gravel layer and are offset 130 to 150 feet horizontally from the central LCRS pipe (Appendix A, Drawing 3). These pipes are available to extract landfill gas from the LCRS layer if future engineering evaluations determine that this is necessary to provide adequate landfill gas control.

As concluded in the Liner Performance Demonstration Report (Golder, April 15, 2003), the containment system for DM-4.1 (identical to DM-5.2 and DM-4.2) meets or exceeds the state standards as outlined in Title 27 of the California Code of Regulations, the federal standards provided in Subtitle D.